

Residential Sprinklers Study Group

Meeting Summary: January 11, 2022 9:00 a.m. to 10:30 a.m.

Virtual Meeting: <https://vadhcd.adobeconnect.com/va2021cdc/>

ATTENDEES:

VA Department of Housing and Community Development (DHCD) Staff:

Cindy Davis: Deputy Director, Division of Building and Fire Regulations (BFR)

Jeanette Campbell: Administrative Assistant, BFR

Jeff Brown: State Building Codes Director, State Building Codes Office (SBCO)

Richard Potts: Code Development and Technical Support Administrator, SBCO

Paul Messplay: Code and Regulation Specialist, SBCO

Travis Luter: Code and Regulation Specialist, SBCO

Thomas King: Code and Regulation Specialist, SBCO

Kyle Flanders: Senior Policy Analyst, Policy and Legislative Office

Study Group Members:

Ron Clements: Chesterfield Building Official, member of VBCOA

Mike Nannery: Assistant Director of Engineering and Development for Chesterfield County Utilities

Mike Eutsey: First Vice President of Virginia Building and Code Officials Association (VBCOA) and Assistant Chief Building Official for Hanover County

Keith Johnson: Virginia Fire Chiefs Association (VFCA), Virginia Fire Services Board (VFSB) Vice Chair, and member of the Board of Housing and Community Development (BHCD)

Meredith Raetz: Planning Engineer with Virginia American Water

Overton McGehee: Habitat for Humanity

Ellis McKinney: Virginia Plumbing and Mechanical Inspectors Association (VPMIA)

Other Interested Parties:

Andrew Milliken: VFCA, VFSB Chairman of Fire Codes and Standards Committee

Timothy Loscomb: Vice President of American Fire Sprinkler Association (AFSA) – Virginia chapter

Jason Laws: VBCOA

Judy Hackler: Executive Director, Virginia Assisted Living Association (VALA)

Jeffrey Shapiro: International Code Consultants

Todd Strang: Spotsylvania County Fire Official

Sean Farrell: Prince William County

Robby Dawson: National Fire Protection Association (NFPA)

John Walser: Fairfax County Fire & Rescue

Glenn Dean

Terin Hopkins

Study Group Members not in attendance:

Jimmy Csizmadia: Secretary of Virginia Fire Prevention Association (VFPA) and Inspector with the Prince William County Fire Marshal's Office

Garrett Dyer: Virginia Department of Fire Programs (VDFFP)

Mike Poole: American Institute of Architects (AIA) Virginia and Principal of Poole & Poole Architecture

Reid Walters: Town Manager of the Town of Independence

Robbie McCraw: Carroll County Board of Supervisors and E&L Diamond Electric, Heating, Cooling and Plumbing

Andrew Clark: Homebuilders Association of Virginia (HBAV)

AGENDA AND DISCUSSION ITEMS:

Welcome

Jeff Brown: Welcomed everyone to the second meeting of the Residential Sprinklers Study Group. The meeting is scheduled until 3pm, with 5 minute breaks every hour and a lunch break from 12pm-1pm. However, the meeting may end early. These meetings are recorded and written summaries are prepared. He asked members to use the raise hand function to speak, and to state their names as they speak. These meetings are open to the public, however discussion is only between the Study Group members, who are welcome to speak at any time. Other interested parties are asked to speak with group members outside of the meeting to express their views. Study Group members are listed in a pod on the side of the main screen.

Townhouse Sprinklers Discussion

Study Group Members - Initial Thoughts

Jeff: asked if anyone had initial thoughts to start the discussions.

Keith Johnson: thanked Jeff and DHCD for arranging the group. He asked Jeff what is the ultimate goal of the Study Group? Is it only to provide information? Obviously, the group is not the decision body, but the group will have a lot of influence. Ultimately, what does success look like, what are the parameters and how will information be transferred? There will be opinions on each side. For him, success would be having a proposal to put sprinklers in townhouses. He is wondering if there will be talk of incentives, offsets or compromises.

Jeff: The primary goal is to give clear information to the Board. There will be code change proposals submitted this cycle related to the townhouse sprinkler requirements. The group will want to think about questions and concerns about data have come up in past discussions when residential sprinkler proposals have been considered. He would like the group to gather and vet the data and information first and provide clarity around the issues. If there are areas of consensus, that would be great. In the areas where there are disagreements, providing a clear succinct report to clarify those issues and discussions will be very helpful.

Jeff: Asked if there were any other initial thoughts to share. He encouraged the group members to speak up. He noted that not every group member was available today, and it may be challenging to get everyone together while General Assembly is in session. He was hoping to wrap the meetings up before the General Assembly session ends, but it may not be possible.

Jeff: There are 4 items on the agenda today to start discussions. In addition, Keith sent over some documents after the agenda went out. He encouraged Keith to refer to any of the documents as applicable, when the topics come up in their discussions. He also said that if there was something else in the documents that he wanted to share with the group, he could do that when they get to the "other considerations" part of the meeting. (They were available to review in the 'files' pod to the left of the main meeting space.)

Jeff: Robbie McCraw was unable to attend the meeting today, but he sent along something for Jeff to share. He read Robbie's statement and shared it in the chat box:

Jeff Brown - DHCD: from Robbie: I live in a rural area and am surrounded by other localities that are rural. The question that arises is available water for sprinkler systems, we have several townhouse complexes that are currently not connected to a public water system. If we have developers that continue to or desire to build townhouses in areas not served by public water systems what type of requirement would have to be made to maintain a water supply for a sprinkler system 09:16AM

Meredith Raetz: This is a valid point. In some areas, there aren't even fire hydrants available because storage water isn't available to supply the hydrants.

Keith: Just because there aren't domestic water supplies or fire hydrants, it doesn't mean that there can't be effective residential sprinkler systems.

Jeff: He thinks this is one of the questions that this group will want to gather information on and continue discussing. If public water is not available at a site, what type of water supply is utilized to supply the sprinkler system? Maybe gathering information on examples of townhouse developments on private systems would be helpful to address questions around requirements for water storage tanks, pumps, etc... And what would be the associated costs? He asked group members to bring back ideas.

Mike Nannery: From a utility engineering standpoint, ground storage tanks and pumps or potentially a Hydromatic tank could provide water. It would need to be engineered. It can be overcome, but would impact cost.

Jeff: That's what he was wondering. It would be great if the group could obtain some examples. He will reach out to Robbie, as he has some rural townhouse developments without public water, and see what type of water systems they utilize.

Keith: If there's a domestic water supply with enough water to operate toilets and sinks in a development, you have enough water to supply a 13D system.

Jeff: He has heard that the supply can vary and he has heard arguments for both sides. Some have said that if it works for the plumbing system, there is adequate water. He asked for examples with townhouse size, plumbing fixture calculation for water supply and calculations for sprinklers, in order to see what the difference is, if any.

Keith: He supplied an IRC Fire Sprinkler Coalition fact sheet called "Water Supplies for Home Fire Sprinkler Systems", which lays out requirements for this. Essentially only 7psi is required to operate, and a residential sprinkler system could use about 8 gallons per minute (which is in line with residential plumbing). He also provided an IRC Fire Sprinkler Coalition fact sheet called "Fire Sprinkler Systems for Townhouses", which addresses costs.

Submitted in the Chat Box:

Paul Messplay - DHCD: For those who are interested, that fact sheet is item 6 in the files pod on the bottom left 09:23AM

Jeff: It would be helpful for this group to review and discuss the data that has been provided as well as some real-life examples of townhouse sprinkler designs, with calculations, so that those discussions can be included in the information submitted to the Board, rather than just providing informational documents submitted by members with no discussion or analysis.

Keith: Will work with other stakeholders to obtain examples. Since there are no requirements in Virginia currently, examples may have to come from other localities.

Effectiveness

Jeff: What will be the impact if sprinklers are added to newly-constructed townhouses? Is there data available that compares new construction with sprinklers vs. those with no sprinklers? What is the closest data that supports the topic?

Mike N: Pre-recession, he had a conversation with a builder about townhome construction. They needed to provide a 2-head system in a 4th floor loft per code. That was 14 years ago. Are there any such requirements now? What was being enforced back then for 4th story loft and taller townhouses? The small residential meter couldn't pass the flow, which they needed to reach the higher floors. Was that local?

Ron Clements: Doesn't know what exactly was discussed back then. However, buildings that are 4 stories or higher, are out of the Residential Code, and into the IBC and VCC, which do require sprinklers now.

Keith: The model fire codes limit townhouses to 3 stories. Buildings with 4 stories and above have to have sprinklers. There was a proposal put forward last time to deal with lofts. Regarding effectiveness, there's a need to look at other localities outside of VA. In MD, there has never been a death in residential buildings with sprinklers. The University of Nevada, Las Vegas (UNLV) study in 2017 was fair on both sides of the argument - not only looking at death and injury, but also looking at building damage, effectiveness, preventing a flashover, etc. The effect on fire fighters also needs to be considered in this discussion. The average sprinkler system may put out 200 gallons of water before the fire fighters get there. This helps the fire fighters, and isn't adding a lot to water damage, considering that a fire hose can put out 100 to 1,000 gallons of water. Smoke alarms are good, but they are notification tools, allowing residents to get out alive. They also need maintenance to work properly. A residential sprinkler can prevent flashover and control a fire, and also do not need human intervention to do so. They can be effective at limiting injury or death and property loss.

Jeff: These are also things that this group needs to discuss and can include in the information that is provided to the Board. Other benefits and improvements that come along with installation of sprinklers, and how the benefits differ from smoke alarms will all help to bring clarity to the final report.

Mike N: Asked if Keith provided all the handouts?

Keith: Yes. A lot of what he just discussed was in the UNLV study, which he thought was fair. It discussed trade-offs and incentives for builders and developers as well as costs.

Mike: He read the materials and noticed that most fires are caused by unintended cooking and a lot of them happen overnight.

Keith: Yes, they are. In one case, he had a call in 2019 with a fire caused by unattended cooking, and the door was not closed. There was no residential sprinkler system and there was a fatality. His opinion is that a sprinkler system may have saved the resident.

Jeff: This a good start to the effectiveness discussion, it will continue and be built upon as we continue our discussions.

Costs

Jeff: There are various costs associated with sprinkler systems. Keith provided some cost information to review. Based on past discussions, potential costs include:

- water service – system requirements, size, water meter
- water supply - public vs. private (tank and pump size)
- utility fees
- design fees
- permit and inspection fees
- system installation
- maintenance costs

Keith: Provided the UNLV study and the Economic Cost Study from Broward County FL, which discuss costs. Also provided is the VA Townhouse Sprinkler Price Survey by Jeff Shapiro with the IRC Sprinkler Coalition, which discuss costs in the Reston, Haymarket, Leesburg, Alexandria, and other areas of northern Virginia. The cost of the system and installation is not the only cost. There are also reductions and savings for construction, such as eliminating secondary access points, reduction of cul-de-sac widths, reduction of required fire flows, decreased required street widths, exterior and interior walls etc. that reduce the cost of building when a sprinkler system is installed.

Jeff: That is a good point and should be considered by this group as we look at the costs. Supporting data and discussion around the various costs and potential cost savings should be supplied. The final report can list not only potential costs, but also potential cost savings.

Ron: The numbers provided in the UNLV study and Economic Cost Study are helpful. He also wants to look at sample townhouse projects and the design of a P2904 system, in rural and suburban areas, in order to determine what the costs are in both areas. It will be helpful to have real world samples, which everyone can look at and agree on, including some actual costs. That will help identify what the actual and specific objections are, to this being a code requirement.

Submitted in the Chat Box:

Keith Johnson - SG: Good point Ron 09:53AM

Jeff: It would be helpful having real world examples. It will be given as an assignment later.

Ron: It would also be helpful to see if this group can agree on what the minimum system requirements would be to meet the code.

Mike N: He thinks the main goal is public safety and property protection. It would be helpful to define the scope: is it global, suburban, and/or rural; is it all sprinkler system types; which area of the buildings are covered. There doesn't seem to be a defined scope of what's in or out.

Jeff: That is a good point, it will help clarify things, especially to define the minimum system requirements. It might take a few examples, some in rural and some in municipal water areas.

Keith: He's personally talking about a system to cover the entire building, especially because it's not easy to predict what a hazard area would be that might start a fire. 13D systems can be used up to 3 stories, then a 13R system would be needed.

Ron: There is an IRC P2904 system that can be designed and installed by a plumber, as opposed to a 13D or 13R, which would come from a sprinkler contractor. Again, there needs to be agreement on what the minimum system requirements would be. Also, who will do field inspections?

Keith: Stated that an NFPA 13D system can be installed by a plumber contractor or sprinkler contractor unless there is some specific license requirement in the state.

Submitted in the Chat Box:

Ron Clements Chesterfield - SG: "Fire sprinkler contracting" (Abbr: SPR) means the service that provides for the installation, repair, alteration, addition, testing, maintenance, inspection, improvement, or removal of sprinkler systems using water as a means of fire suppression when annexed to real property. This specialty does not provide for the installation, repair, or maintenance of other types of fire suppression systems. The PLB classification allows for the installation of systems permitted to be designed in accordance with the plumbing provisions of the USBC. This specialty may engage in the installation of backflow prevention devices in the fire sprinkler supply main and incidental to the sprinkler system installation when the installer has received formal vocational training approved by the board that included instruction in the installation of backflow prevention devices. 10:07AM

{BREAK 10:02 to 10:07}

Jeff: He will give out homework assignments to get more detailed information on effectiveness and cost to discuss at the next meeting.

Cost Impact

Jeff: Asked what does the cost of the system do to the cost of the housing and affordable housing?

Keith: Inspections would be the same for a sprinkler system as other plumbing, and would be performed at the same time. He thinks they shouldn't make it more than it really is. Also wanted to point out that ongoing inspections are not required for a 13D system, and they are also not required by NFPA 25. Only the initial inspections are required.

Ron: Inspectors would need additional training and additional inspection time. So, there is an impact. He is not trying to make it more than what it is, but there is an impact that should be considered. He has a staff that is already running over 100,000 inspections per year. If this adds two to four additional inspections per townhouse, that would be a significant increase in the number of inspection a year and is something that he will have to consider. Also those plumbing inspectors have never inspected a sprinkler system before so they are going to have to be trained to do that, so there is going to have to be a training effort, hopefully at the state level. Most jurisdictions are also not doing plan review on trades. They will either have to start doing plan review on trades, in order to verify that the sprinkler system is in compliance with the code, or the inspector will have to know the code requirements and inspect for compliance. This is definitely something that should be considered and not lost in the conversations.

Other considerations

Jeff: Is there anything else to consider? He asked Keith if there was anything else in the documents he submitted that he wanted to discuss.

Keith: A lot has been covered in this discussion. He thinks there is a bit of a disadvantage in Virginia, because individual localities are not able to make their own decision about this issue. He thinks that if they were, there would have already been some localities in the Commonwealth to require sprinklers in townhouses. The Commonwealth of Virginia is large and vast, which makes this process difficult. He is a fire chief and official, and looks at things from that angle, but he's also sympathetic to affordable housing and the impact on inspections and other business partners. Just because he is passionate about life safety, doesn't mean that he disregards these other issues. There is a duty to ensure fire safety. There will be costs and challenges, but

there are also incentives that offset some of the costs. In the UNLV study, there's a 97% increased chance of survival in residences with sprinkler systems. Townhomes are a higher hazard occupancy and it's important to start with them, because multiple dwellings are connected. They could discuss a minimum number of units, where required sprinklers would kick in. For example, it would not be applicable in a duplex, but would it be required if there are 3-4 units or more?

Mike N: There has been good discussion. The attachments are good to read. He finds that people like options. He would encourage the possibility of having options in the code, rather than all or nothing. He tries to provide safe infrastructure to support quality of life, and it's hard to put a price tag on a life.

Keith: Another consideration could be homebuyer interest. He submitted a fact sheet about homebuyer interest from the Residential Sprinkler Coalition. Beginning in 2009, the IRC required residential sprinklers in all new homes, but Virginia removed that requirement from single family and townhomes. The fact sheet indicates that in a 2014 survey, $\frac{3}{4}$ of the respondents were more likely to buy a home with sprinklers than without them. It also talks about the myth around the need for backflow preventers, which are not required, as well as the myth about inadequacy of rural water supply. People don't think about safety, but it's important. Things like smoke alarms, escape planning and sprinkler systems are important. People do feel safer having sprinklers if they are an option, but they don't know about the effectiveness of sprinklers, so they don't ask for it.

Mike N: He will give more consideration of the cost impact from a utilities standpoint. Everyone in the Richmond Metro area does something different about trying to accommodate the flow of a residential sprinkler system without a larger connection charge. Whatever recommendations the group has about system type, flows and pressure, he will be happy to add to that by determining the cost impact from a utilities standpoint. Also, he agrees that safety in townhouses is only as good as one's neighbors.

Other

Jeff: There will be some more discussion about the parameters, and more homework in that direction. There were a lot of good things that came up in this discussion that were not on the original agenda. Getting to agreement on the parameters, and finding samples of townhouses and systems will be key.

Assignments and Next Steps

Jeff: Will reach out to some group members after this meeting to bring back information for the next meeting. All group members are reminded to forward any additional information for consideration to DHCD as soon as possible for inclusion on the next agenda

Information needed:

- Types and cost of water supply systems in areas without public water. Examples of townhouse sprinkler designs with calculations and specifications.
 - Jeff to contact Robbie for information on rural townhouse developments without public water.
- What will be the impact if sprinklers are added to newly-constructed townhouses? Is there data available that compares new construction with sprinklers vs. those with no sprinklers? What is the closest data that supports the topic? What other benefits and improvements come along with installation of sprinklers?

Next Meeting

Jeff: A Doodle poll will be sent after we have some more solid things to bring back to the next meeting. He will try to give 2-3 weeks' notice, and will get discussion items and agenda out before the meeting.